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ABSTRACT

Since the 1950s some educational researchers have argued for a strong focus on problem solving in administrator-preparation programs. This paper discusses two types of problem-based learning (PBL)--simulated and authentic. It discusses various PBL concepts and presents two vignettes used during the 1995 and 1996 academic years at the University of Connecticut's Department of Educational Leadership. The first vignette was a simulated-problem project involving the integration of educational technology in a school district, and the second involved an authentic-problem project in a magnet school program. Each project's planning and scheduling activities, setting, sequence of project activities, culminating activity, and assessment are described. The paper argues that because PBL is situated, involves group problem solving, and deals with highly complex problems, it helps students transfer learning to the work place. Both simulated and authentic PBL offer students opportunities to transfer declarative and procedural knowledge to work-place settings. (Contains 32 references.) (LMI)

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Running Head: Transfer of Learning

Increasing the Transfer of Learning through Problem-Based Learning in Educational Administration

A Paper Presented at the American Education Research Association
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In 1958 Hemphill argued that "leadership and group problem-solving are central concerns of administration" (p.85). Ten years later in a paper presented at the seventeenth UCEA Career Development Seminar held in Portland, Oregon, Keith Goldhammer urged school administrators to become clinicians. He recommended that administrator preparation programs afford future administrators opportunities to apply their experiences and knowledge to the identification of educational problems and to search for solutions to those problems. Goldhammer called for preparation programs to be constructed with the following components: "knowledge-building experiences, skill-building-experiences, diagnostic experiences, experiences in the application of knowledge and data to concrete situations, experiences in the interpretation of knowledge and its 'reduction' for the specific application to discrete problems and communities" (p. 181). Just as clinicians learn and practice their skills on real problems, Goldhammer recommended that administrator preparation programs focus on actual problems encountered in educational settings.

While Hemphill, Goldhammer, and others called for strong program focus on problem solving in the 50's and 60's, current researchers in educational administration such as Leithwood, Begley, and Cousins (1994) continue to argue that "problem solving is a productive conception of leadership" (p. 9). They conclude that there is some empirical data and considerable theoretical support "to build formal [preparation] programs for improving expertise" in what they call swampy problems (p. 204). The challenge for leadership

preparation programs lies in designing experiences in which students can learn and practice adaptive behaviors associated with clinical practice.

According to Resnik (1987), programs should focus on preparing students "to be good adaptive learners, so that they can perform effectively when situations are unpredictable and tasks demand change" (p. 18). Since a major goal of administrator preparation programs should be to develop knowledge and cognitive skills, learners, according to Resnick "will need to construct appropriate mental models of systems with which they will eventually interact..." (p. 18).

This paper discusses two types of problem-based learning (PBL) that are not only appropriate teaching approaches for declarative, procedural, and contextual knowledge, but also help students form mental models that are applicable to actual workplace settings. The paper begins by describing two types of problem-base learning: simulated and authentic PBL. This is followed by discussion of various conceptions of PBL. Because PBL is situated, involves group problem solving, and deals with highly complex problems, we believe that more learning will be transferred to the workplace if a PBL approach to teaching rather than a lecture/discussion approach is the main focus of preparation programs. This is followed by two examples of PBL: one vignette describes a simulated-problem project on technology; the second vignette details an authentic-problem project of a magnet school program. Finally, this paper argues that both simulated and authentic PBL have the potential to move preparation programs closer to preparing students for the workplace because they afford students

opportunities to take declarative and procedural knowledge and transfer that knowledge to workplace settings.

Conceptualizations of Problem-Based Learning

According to Bridges (1992) problem-based learning has five characteristics:

1) The starting point for learning is a problem.
2) The problem is one students are apt to face as future professionals.
3) The knowledge that students are expected to acquire during their professional training is organized around problems rather than disciplines.
4) Students, individually and collectively, assume a major responsibility for their own instruction and learning.
5) Most of the learning occurs within the context of small groups rather than lectures (p. 6).

Bridges describes two major versions of PBL: student-centered learning and problem-stimulated learning. These versions are similar in that both begin with content, include administrative problems, and have project teams with the instructor serving as a resource. In both versions students are evaluated in a variety of ways and "Developing administrative and problem-solving skills, and building a knowledge base for administrative practice...(p. 7)" are common to both.

Bridges explains one way in which the versions differ, "...student-centered learning emphasizes the goals of fostering the skills needed for lifelong learning" (p. 7). Thus, the student-centered PBL version is more self-directed; students decide what the

objectives are, as well as the readings and other resources they will consult. Caffarella's (1991) focus on self directed learning as a self-initiated process of planning and managing learning appears to be akin to Bridges' student-centered PBL approach.

This paper conceptualizes PBL differently from Bridges and others such as Waterman, Akmajian, and Kearney (1991). Since problem-based learning is an approach to learning with a challenge at its core, versions and variations of problem-based learning can be found in numerous preparation programs. For example, the project method, as originally proposed by William Heard Kilpatrick in the first quarter of the twentieth century, could be considered a form of problem-based learning (see Kilpatrick, 1918). Additionally, teaching approaches involving case studies also could be classified as a type of problem-based learning. This paper conceptualizes problem-based learning in two overarching categories: *simulated* problem learning and *authentic* problem learning. Both versions of PBL can be student centered and both present powerful learning opportunities for administrator preparation program students.

Authentic and Simulated PBL

Some proponents of PBL in educational administration argue that "...the best problem-based learning is not simulated" (Martin, Murphy, & Muth, 1993, p. 145). We believe critical determinants for transfer of learning are the types of problems, the involvement of the group, and the opportunity for students to reflect with expert problem solvers as these experts attempt to solve these ill structured problems. These factors may be equally important as is the issue of whether using authentic problems is superior to using simulated problems.

Authentic-problem-based learning utilizes actual problems of current practice. Simulated problem learning uses problems either created by the instructor and/or others, or actual problems that have already occurred. In PBL the instructor and/or others present the project description to students. This project description includes the project requirements. The instructor may or may not include related readings and other resources in the PBL Project. Thus, the significant difference between the two overarching categories described here is that in *authentic* problem-based learning, a "real" problem which currently needs solving is the focus of attention.

Situated Learning

The conception of PBL presented here addresses three issues related to the need for learning to be situated: problem complexity, reflective thinking, and group involvement. Because the student is involved in a *real* problem in authentic problem-based learning, the conditions for what Lave and Wenger (1993) call "legitimate peripheral participation" are more closely approximated. Lave and Wenger view legitimate peripheral participation as a process in which learners "...participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the socio-cultural practices of a community" (p. 29). Problem-based learning is certainly not full participation in the community of practitioners: that part of the preparation program is more closely reached in the internship. However, this partial participation affords students opportunities that more closely are aligned to issues of learning transfer.

Group Problem Solving and Reflection

Since a major goal of PBL is to increase problem-solving expertise, Vygotsky's concept of the 'zone of proximal development' is a theoretical underpinning of PBL. This zone is the gap between what a person's individual capacity for problem-solving is and the capacity of the group or individual with whom the learner is working. In the group process of discussing and critically reflecting, the problem-solving capacities of the group afford the individual learner opportunities to internalize these group understandings.

At the same time students need to have conversations with experts in order to probe how effective practitioners solve these same problems. This can be done through both categories of PBL. Real audiences for the culminating activity of the PBL project as well as people serving as resources in solving the problem, afford students opportunities for learning how experts engage in problem solving.

The concepts of group problem solving and reflection are closely linked. The goal of reflection is that the learner will use reflective skills to examine ill-structured problems by continually analyzing, exploring, gathering data, and critiquing. Describing the findings from a study on the problem-solving of reputationally effective superintendents Leithwood (1995) discusses the high level of reflection which he found to be an integral part of their problem solving practice. Similarly, Schön (1987) advocates for the need for "reflection-in-action through which practitioners sometimes make new sense of uncertain, unique or conflicted situations of practice" (p. 39). Schön argues that if instructors encourage reflection the student will not assume "that existing professional knowledge fits every case

nor that every problem has a right answer" (p. 39). Reflective thinking is crucial to helping students improve their problem-solving expertise.

Problem Complexity

Another part of this conception of PBL involves the nature of the problems used in a PBL project. Leithwood, Begley and Cousins (1994) categorize problems which confront educational leaders into two types: high ground and swampy. They discuss the characteristics of preparation programs for developing expert school leadership and urge programs to focus on "swampy" problems. High ground problems are those which are "...of a more technical nature, where a well rehearsed procedure for solving was available" (p. 53). Swampy problems are those which are complex, at least to the person who has to solve them. The authors argue that problems are swampy when "...one only vaguely understands the present situation, has no clear way of knowing what would be better, and lacks procedures for addressing the obstacles or constraints in the situation" (p. 43).

Similarly, King and Kitchener (1994) discuss well-structured and ill-structured problems. Well-structured problems are those that can be solved with a high degree of certainty. Experts tend to agree on the correct solutions. Ill-structured problems are those in which experts often disagree as to the best solutions. Thus, not only is it nearly impossible to describe these problems with a high degree of completeness, they cannot be resolved with a high degree of certainty. Given the vast array of constituents and needs with which school administrators are faced, it is crucial that the preparation of future educational leaders focus on solving swampy, ill-structured, problems.

Successful Transfer Practices

Whether the problem is *authentic* or *simulated*, problem-based learning requires students to *act on*, rather than simply talk about, the problem. Since preparation programs want what is learned in the classroom to transfer to practice, the issue of learning transfer is central to this discussion. Laker (1990) differentiates between near and far transfer of learning which can be placed on a continuum. Near transfer is the extent that an individual applies what was learned in training to similar situations in the workplace. The idea in near transfer is that the experience approximates as much as possible actual tasks individuals will be required to do on the job. Far transfer is the extent to which trainees apply the training to new or different situations from the ones experienced in training. Since problem-based learning affords students opportunities to act on problems, one can speculate that a PBL approach may enhance the likelihood of both near and far transfer of learning.

Declarative, Procedural and Contextual Knowledge

McCarthy, Kuh, and Beckman (1979) surveyed graduate students representing sixty-two educational administration preparation programs and found that 50% felt that most of the content of their programs was not relevant to problems in the real world. Historically the main focus of administrator preparation programs has been on declarative knowledge. Declarative knowledge involves knowing *about*. Students learn about how decisions are made and about how to solve problems. The primary teaching approaches or strategies for declarative knowledge have been lecture, discussion, reading or combinations of these. In a more recent survey Cordeiro, Krueger,

Parks, Restine, and Wilson (1993) collected data from twenty two institutions and found little evidence that other teaching approaches are consistently used in preparation programs. Thus, the criticisms of preparation programs may still be entirely just.

One way for programs to better address the ties between theory and practice is to afford students opportunities to learn what Sternberg and Caruso (1985) call procedural knowledge. They argue that procedural knowledge is the "...knowledge that is useful in one's everyday life." Procedural knowledge informs us as to *how* to do something. If a student knows about something (e.g., what good group facilitation involves--declarative knowledge) and how to use that knowledge (e.g., the student has demonstrated use of facilitation skills in a variety of contexts--procedural knowledge) there is a greater likelihood that that knowledge can be tied to actual practice. The research on situated cognition and learning environments tell us that "knowledge and cognitive skills are highly dependent on the contexts in which they are acquired" (Choi and Hannafin, 1995, p. 57). Thus, without providing a context for learning, it will be difficult for instructors to see if students were able to tie theory to practice.

Problem-based learning has considerable potential for affording students "authentic instructional settings and tasks" (Leithwood, 1995, p. 130). This authenticity is related to Perkins and Salomon's (1988) high road transfer. They contend that "High road transfer....depends on deliberate mindful abstraction of skill or knowledge from one context for application in another" (p. 25). In one type of high road transfer called *backward-reaching*, an individual reaches back into his/her experiences and tries to match the features

of the current situation. Preparation programs cannot provide students with opportunities to learn in all the many settings in which they will work (contextual knowledge) however, programs can provide opportunities in settings that will approximate the conditions which will be found in student's future job sites so that students can 'reach back.'

The work of ecological theorists such as Shaw, Turvey, & Mace (1982) and Gibson (1986) is concerned with the structures in the physical environment. They focus on action as an interaction with the environment. Since the view of learning presented here is influenced by the works of these ecological theorists as well as Lave and Wenger (1993) and Vygotsky (1962), this paper contends that PBL projects, whether they are simulated or authentic, afford learners opportunities "to participate in an activity in a socially constructed domain of situations..." (Greeno, Moore, & Smith, 1993, p. 161), that increase the likelihood that transfer will occur.

The Context

Two vignettes used during the 1995 and 1996 academic years at the University of Connecticut in the Department of Educational Leadership are presented here as examples of simulated and authentic problem-based learning projects. In several program areas a typical fifteen week course includes one PBL project lasting from four to seven class sessions. Since analyzing and improving group processing skills is a key part of the PBL projects, students are taught group facilitation skills during orientation to graduate programs. This orientation includes approximately four hours of group process training. The *Interaction Method* by Doyle and Straus (1982) is the

main focus of group process training; however, a variety of strategies and exercises are included.

First Bytes: A Simulated-Problem Based Learning Project

The PBL Project entitled "First Bytes" requires students to apply previous learning from modules and courses on change, staff development, group interaction, and communication to the complex issue of integrating technological tools in the learning process. In "First Bytes" students assume the role of an elementary principal who has been asked by the superintendent to prepare a technology plan for the first year of a three-year implementation. At the completion of the project, students should be able to define the opportunities and challenges associated with technology integration, develop a viable plan for integrating technology, produce the plan using electronic technologies, and participate productively in an administrative review of the plan with a live audience.

Scheduling and Planning

Initial discussions between the authors focused on scheduling the PBL Project, the cohort of students who would be completing the project, revisions to its content and sequence based on data from previous implementations, and site selection. Scheduling involved coordinating students' summer internships with the availability of the professor (an adjunct) and suitable facilities. Since students had already experienced several problem-based projects as part of their graduate program, the professors discussed issues such as group characteristics and student experience in group roles. The collaborative review of past PBL Project data is a requisite for

improving both this project and the sequence of PBL experiences in the program.

For example, analysis of the data gathered from the earlier implementation of "First Bytes" revealed that, because most students have had few personal and professional experiences with technology, they were limited in their ability to produce a forward-thinking integration plan. It is indeed difficult for professionals familiar only with a single classroom computer used for drill and practice to contemplate the integration issues associated with a fully networked environment described in "First Bytes." To compensate for this experiential deficit, the instructor decided to hold the project in a state-of-the-art "electronic school" and engage the services of its technology leader as a resource person on integrating technology.

Setting

During the summer of 1995, seventeen students spent four half days working on "First Bytes." The site for the PBL Project was one of the computer laboratories at a middle school. Built in 1991, the school is equipped with classroom telephones, a building LAN (local area network) which supports both computer platforms and modem access, and a media distribution system which can deliver programming to classrooms which is live or transmitted from cassettes, cable, and satellite. Holding the project work sessions in this kind of environment with immediate access to multiple technologies seemed a partial solution to the student experiences encountered the previous summer.

Sequence of Project Activities

During the session prior to the start of the PBL project, students received a notebook containing a class list, a summary of the group interaction roles, a copy of "First Bytes," a set of readings that accompanied the problem, a tentative meeting schedule, and directions to the site. Because of her knowledge of student involvement in previous PBL Projects, the program facilitator assigned group roles for the initial session. Roles such as facilitator, manager and recorder were assigned for the first session only. At this time the facilitator provided a brief overview of the scheduled activities. Students were told in advance that all sessions would be videotaped and that these videotapes would be used by them to analyze their behavior in the groups.

On day one of the project, students first met with an employee of the district who had designed the middle school's sophisticated technologies and is a member of the district's Information Team, a K-12 department charged with building a community of independent technology users. This guest expert engaged students in a dialogue designed to raise their awareness of instructional technologies, to explain the instructional potential of networked technologies, to share his experiences with integrating technologies into teaching, learning, and administering processes, and to prepare them to use available technologies for the project. This guest and the Team's other computer teacher agreed to be available throughout the duration of the PBL Project as "experts on call."

During class break the instructor met with the group managers to review the manager's plan, the role assignments, and housekeeping

details. Following the break, she provided an overview of the PBL project, explained data collection processes, described the culminating administrative review activity, and reviewed her observer/coach role.

Responsibility for the PBL sessions was then turned over to the groups in their assigned roles. Typical sessions included the presentation of the agenda by the manager while the facilitator reviewed the remaining agenda for adjustment. As the facilitator conducted the session, the recorder kept a written record on a flip chart and posted completed sheets on walls. The group regularly recessed for a food break, a time during which the manager and facilitator reviewed the remaining agenda for adjustment. This break also allowed the instructor to consult with individual students. Each session closed with two activities--eliciting volunteers for the facilitator and recorder roles for the next session and debriefing role performance and group effectiveness in oral and written formats. Whenever appropriate, the instructor also debriefed on the group's interaction and its progress and posed questions to nudge the group toward successful completion.

Since practicing administrators rarely receive feedback on their group interaction skills, personal reflection on these skills is a critical habit for prospective administrators to develop. To this end, the instructor added a written component to the debriefing process. Each student was asked to record peer feedback on a "Reflections and Feedback" sheet. Overnight the student reflected and commented on the feedback and his/her own perception of role performance. At the following session, the sheet was given to the instructor so that she

could add her comments from her observation notes. The sheet was then returned to the student with instructions to keep them until the end of the project. At that time, students were instructed to review their feedback sheets, view the videotapes, and reflect on their role behaviors in their journals.

Group effectiveness was rated by each student at the end of the session, using the "Rating Group Effectiveness" form adapted from Hill (1977). It is composed of eleven characteristics of effective groups: participation, listening, leadership, goals, diagnosis of group problems, conflict, decisions, creativity and growth, trust, and feelings--were rated using a seven point Likert scale. After students completed the rating at the end of a session, the instructor commented on her observations of the group's interactions.

After class, the instructor calculated the mean and range for each characteristic and reported them at the next session on a spreadsheet. Students used the data during the sessions to discuss ways in which to improve group effectiveness. Each student received a copy of the final spreadsheet and a summary of the instructor's observations on the group's effectiveness.

Culminating Activity

The PBL Project culminated in a two-hour administrative review session rather than a formal presentation to a live audience. While planning for the project, the instructor had decided that students would not have adequate time to develop a plan and to prepare a formal presentation of it. Since administrative review of plans is a standard practice in many school districts, she decided to have students participate in an administrative review. For the project, an

administrative review was defined as an informal session during which administrative colleagues (the live audience of practitioners) review the integration plan. Its purpose is to share insights and expertise to improve plans prior to their formal adoption. For the administrative review the instructor contacted several administrators and technology members from several districts which had successfully integrated multiple technologies. The live audience was composed of an urban school district assistant superintendent for curriculum and instruction, a suburban computer teacher credited with integrating technology at the elementary level, and the instructor in her professional role as a K-12 supervisor of the district's Information Team. Practitioners were mailed a copy of the project and assessment criteria for the plan evaluation which had been drawn from PBL readings and exemplary practice covered in previous modules and courses. Because of the tight timeline of the PBL Project, it was not possible to send members of the live audience advance copies of the technology integration plan. Consequently, the group distributed it to the review panel upon arrival. The panel then retired to an adjacent room to review the plan. The instructor provided audience members with rating sheets based on the assessment criteria to guide their reviews and evaluation of the plan and answered questions.

Upon reassembling, the members of the audience took turns commenting on the plan and asking students questions. A lively dialogue ensued with students having an opportunity to probe the audience's experiences. The session was also videotaped, and the group's recorder used PowerBooks to make notes.

Assessment

Assessing student performance on the project and providing detailed feedback is a key feature of this approach to PBL. Each student was given a packet which included the instructor's comments on the student's role behaviors, a summary assessment of the plan (from the panelists as well as the instructor), summary comments and mean scores from the group process instrument used at the conclusion of each session, and the recorder's notes from the administrative review.

Valuable data for improving the content of the PBL were gathered from the students' talkback sheets, their written evaluation of the background readings, and a reflective journal kept by the instructor. Together with the assessment of the quality of the plan, these data have been analyzed by the instructor for the purpose of improving the content of the project and revising its sequence. All data are then reviewed to identify trends for improving the overall program.

The quality of the group's integration plan was measured against criteria gleaned from the background readings and prior learning. The plan architecture criterion, which deals with the format and structure of the plan, requires students to apply what they had learned in earlier modules regarding executive communication. The plan efficacy criterion and its indicators measure the extent to which students were able to apply what they had learned about change and had gleaned from the background readings on technology. In addition to the "live" feedback, the reviewing audience used a five-point Likert scale for rating the plan on each criterion and provided written

feedback. When assessing the plan, the instructor used the same rating sheet. She then calculated the range and mean for each criterion and summarized the written comments. Each student received a copy of the summary.

An Authentic Problem-Based Learning Project: *Beaches, Boats and Bridges: The Maritime Magnet Program:*

The PBL project entitled "Beaches Boats and Bridges: The Maritime Magnet Program" was incorporated into a doctoral level course dealing with educational partnerships. This project deals with an actual problem involving several Connecticut school districts and a magnet school program located at a maritime museum. Resources accompanying the project included research on magnet schools, integration, organizational communication, and team learning. In the project students assume the roles of a building level team including the principal who have been asked by the superintendent to present to her cabinet an action plan reflecting the challenges involved in continuing the partnership, the resources needed, and how the program will be evaluated.

Selecting and Planning the Project

One of the many reasons for providing students with an opportunity to do an authentic problem project is that school districts and/or other educational organizations can benefit from the work completed by students. This doctoral class was located at a regional campus in another county in the state. Because the majority of students in this doctoral cohort worked in that county, the instructor wanted to identify a problem that had the potential to be relevant to many of the districts in that area. Several months before the start of

the course the instructor contacted several school districts and personnel in regional education service centers to discuss the content of the course and how problem-based learning might be incorporated in the class. Because the course dealt with schools and other agencies partnering to improve educational opportunities for children, two overall criteria for identifying a potential problem were addressed. First, the instructor wanted the problem to involve a minimum of three organizations so that the complex nature of partnerships would be investigated. Secondly, because students were involved in a research methods course simultaneously, course instructors encouraged students to combine several of the data collection projects assigned in the methods course with the data collection necessary for the PBL project. Thus, the project needed to allow opportunities for students to collect various types of data. Once several possible problems for the course were identified, the instructor interviewed one or two individuals most involved in the problem. Through a process of elimination involving field-based educators, a problem for the project was identified.

Once the instructor wrote up the problem and identified basic resources, a copy of the problem project was sent to seven individuals involved in the magnet maritime project in order to check for accuracy and thoroughness. These individuals included superintendents, principals, teachers and maritime personnel. Edits to the project description were made with their feedback.

Sequence of Project Activities

During the fall of 1995 twenty-six students spent approximately 14 hours of class time as well as additional time outside class,

preparing for the project. Students were divided into four groups of either five or six. Once the project was distributed and questions were answered the instructor spent the remainder of her time observing students in their small groups, and answering additional questions.

Groups varied considerably in how they attacked the problem. Instead of meeting in the room assigned for their group, one group rescheduled their session holding it at the maritime center. Another group choose to meet on a Saturday morning at a group member's home because of the technology available to them.

In order to complete the project students conducted interviews with maritime educators, various school personnel from several of the districts involved, parents of children who had been involved the previous year, and children who had attended earlier sessions. Additionally, several students observed the program in action while taking field notes. One group created a parent and child survey while another group created a teacher survey in order to analyze various perspectives regarding the many issues of the magnet program partnership.

Each time the group met they were asked by the instructor to use the group processing skills that had been presented in a prior course. As the instructor observed groups she noted group member interactions. These notes were later shared with individual students in their project feedback sheets.

Approximately one week prior to the presentation, each group mailed one copy of the plan to those individuals who were asked by the instructor to serve on the final panel. The instructor provided a

series of questions which could be used as a guide by the panelists in evaluating the written plan. Each panelist was asked to rate and comment on the quality of this plan prior to its presentation.

Culminating Activity

The PBL project culminated in a four 90 minute sessions involving a formal presentation to a live audience. This audience included individuals first interviewed for the project as well as those who had read the first drafts of the project for accuracy. One reason for inviting these individuals was that they had a vested interest in the project and had requested copies of the plans to share with their colleagues. Each session was designed as formal and included either three or four individuals who made up a "superintendent's cabinet." Following each student presentation and questions from the 'cabinet,' the guests met for approximately 30 minutes in another room to discuss the feedback they would provide regarding the oral presentation as well as the written plan.

Upon returning to the classroom, each guest discussed the quality of the presentation and plan for that group. This was followed by informal student questions.

Assessment

Student assessment took place both during and at the final session. Students were not graded on their plans or presentations. Instead, they were provided with written individual and group feedback drawn from notes taken by the instructor during the project as well as from the presentations and transcripts of tapes made during the presentations as well as comments of the panelists. Students also assessed their own group and individual behavior during the project

and at the conclusion. On a talkback sheet completed at the conclusion of the project, one student commented,

> I am a proponent of situated learning and problem-based learning activities. In developing situated learning environments the learner must be engaged for reasons defined within the situation. You need to say to yourself, "I'm doing this to enable these school districts to provide this integration opportunity for their students." --not "I'm doing this because my instructor asked me to." This 'buy-in' has a strong affective component. (S. W. 12/13/95)

PBL as an Integral Feature of Educational Leaderships Preparation Programs

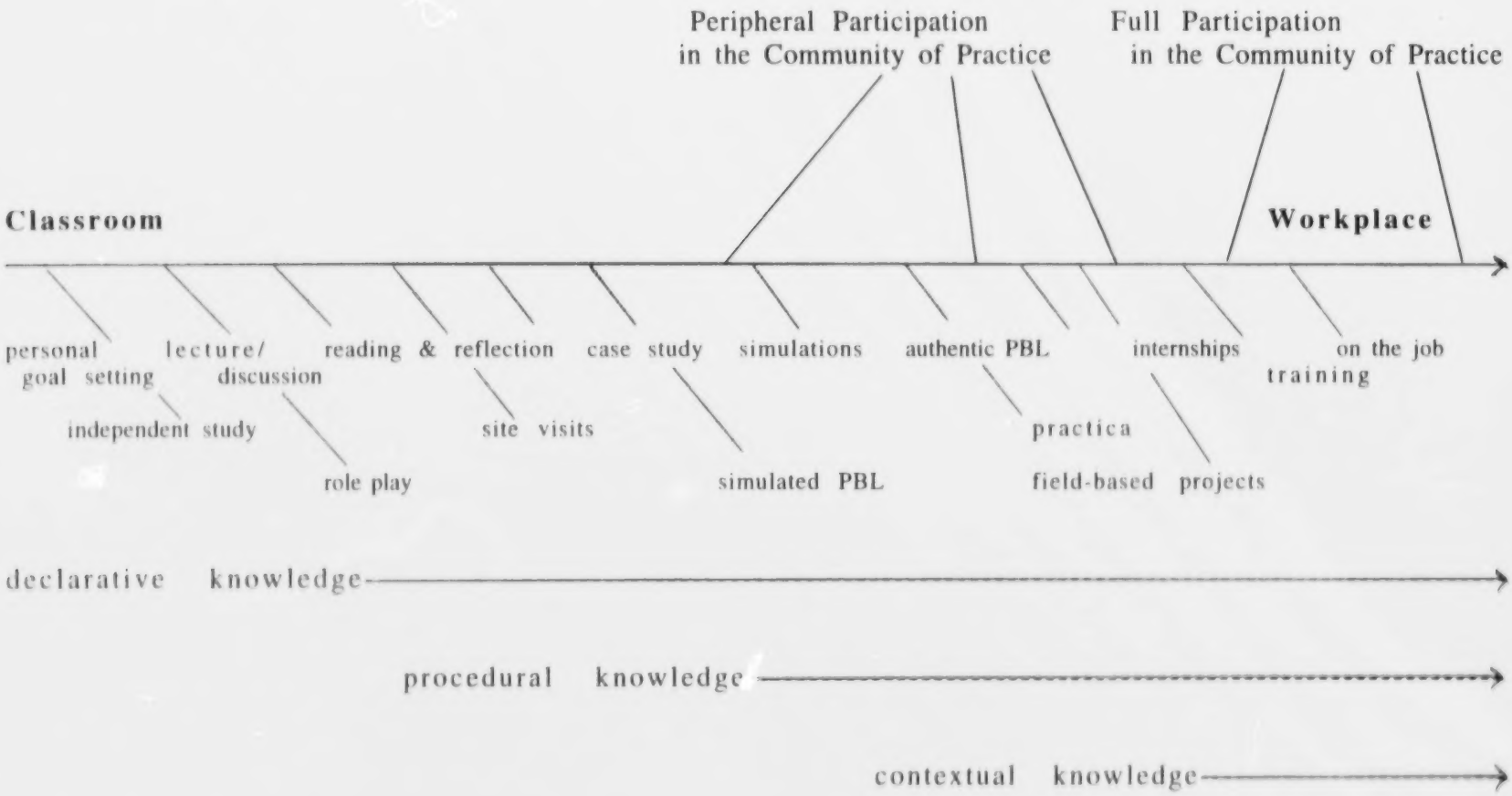
Preparation programs have too often been a smorgasbord of courses, lacking coherence. As discussed earlier the dominate instructional modes of preparation programs have been lecture, reading and discussion. Figure 1 proposes that coherent programs must consider the types of knowledge that needs to be learned (declarative, procedural, and contextual), the many possible teaching strategies and approaches best suited for teaching that type of knowledge (lecture, case study, PBL, field experiences, etc.) and how these activities can lead students closer to full participation in the many settings in which students will eventually practice.

Given that students are expected to learn declarative and procedural knowledge and then apply that knowledge to situations later in actual job sites, preparation programs should provide a variety of learning approaches and environments. The nature of the type of knowledge students need to acquire, should designate the strategy or approach to teaching that might best match that knowledge. Both simulated and authentic PBL can provide opportunities to learn

declarative and procedural knowledge. Additionally, both types of PBL can provide contextual information that approximates future work settings. Authentic PBL can take students' even closer to legitimate participation in actual work environments. As Greeno, Moore and Smith (1993) state, "transfer can occur from situations in which instruction deliberately shapes a student's activity, and in those cases the social interactions that constitute instruction play a critical role" (p. 104). Authentic PBL is one of the few instructional modes that allows social interactions within the context of an actual problem. If students are provided with multiple opportunities for practicing actual problems in real contexts, then there is greater likelihood that learning will be applied to far transfer situations.

Program coherence involves scaffolding learning opportunities for students. For example, if one goal of a program is to enhance group processing skills, then some training in group processing prior to beginning the activities which will necessitate the use of these skills could be afforded to students. During the actual learning activities further opportunities for learning procedural knowledge related to group processing would build on declarative knowledge. Additionally, students should be offered multiple opportunities for practicing these skills. For learning to occur it is crucial that students receive feedback so they can assess their progress and growth. Both vignettes describe multiple examples of student assessment and feedback mechanisms that stress the recursive nature of learning. this recursiveness is a theoretical underpinning of problem-based learning.

Transfer of Learning Continuum in Educational Administration Programs



Because PBL situates learners in a context, involves swampy, ill-defined problems, requires reflective thinking, and includes groups problem-solving together, the likelihood increases that what is learned in administrator preparation programs will be transferred to actual school settings. PBL is an approach to learning that is well worth consideration by those who prepare educational leaders.

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